

# Leo Yu-Heng Xie

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## **SKILLS SUMMARY**

- Leadership
- Mechanical and electrical skills and knowledge
- Coding experience since 2017
- 3 years of summer job work experiences
- Numerous robotics competition experiences, including VRC & FIRST since 2018
- Self motivated and fast learner

## **PROJECTS**

**Vex Robotics Competition Robot** | X-drive chassis with odometry algorithm Jan. - Feb. 2021

- Designed and built special X-drive for custom irregular robot movements
- Implemented advanced optical sensor system for color and object distance detection
- Applied vision systems sensor for object tracking and following
- Tracking encoders for odometry, gyro and inertial sensors for heading correction

**Hidden** | Pen-shaped device to destroy inked QR/bar code Sep. 2020 - Feb. 2021

- Created a device to destroy inked codes on shipping labels to protect private information using special thermal tips
- Designed with a main control system using ARM Cortex M0 & current control system
- Implemented a temperature control system using thermal fuse, temperature sensors and smart chips
- 3-D Printed design of the device exterior shell

**Dual rehabilitation robot** | Upper and lower limb recovery robot Apr. 2020 - Present

- Developer assistant of mechanical improvements for Dr. Robot Inc. along with University of Western Ontario & CSTAR to implement a market ready rehabilitation robot

**Portella** | Knee joint rehabilitation equipment Aug. 2019 - Feb. 2020

- Utilized EMG technology to detect muscle-nerve signals to direct electrical motor movement along with AI programming algorithms
- Designed to improve the effectiveness and intensity of rehab treatment after knee joint replacement surgery

**Cleaner robot** | The practical solution of the geese excrement Jan. - Apr. 2018

- Created a cleaner robot to detect and dispose of geese excrement within local community
- Implemented distance sensors, and camera vision with Raspberry Pi

## ***LEADERSHIP EXPERIENCES***

**Club Founder**, LeRoi Robotics Vex Robotics Competition Team 81208X Jun. 2018 - Present

- Managed the whole process of the club, including recruitment, designing and building the robot, programming and outreach, arrange competitions annually
- Following up with the editing of engineering notes prepared for each competition
- Mentored rookie teams throughout community

**Club Director**, St. Robert CHS Robotics Club Sep. 2020 - Present

- Managed the club's routines, teaching the competition game rules, led the design and build of the robot, mentored programming and engineering notes process, outreach.
- Team Captain, lead team to win Inspire Award at the 2020 FTC Ontario Championship

**Executive Member**, St. Roberts Robotics Club Sep. 2018 - July 2019

- Led programming sub-team, oversaw design and build of competition robots
- Mentored new club members

**Executive Member**, St. Robert CHS DECA Club Sep. 2019 - Present

- Current written cluster trainer, responsible for training and preparing the entire written cluster for competing at the 2021 DECA Ontario Championships

**Executive Member**, St. Robert CHS STEM Council Sep. 2020 - Present

- Preparing materials for promotion
- Discussing with various school clubs and councils for collaboration events

## ***PROGRAMMING SKILLS***

- Python, Java, C++, C#
- JavaScript, HTML, and CSS for web development
- TensorFlow for machine learning and OpenCV for vision
- GitHub, basic networking
- Adobe Photoshop and Premier, VSDC Editor
- Arduino and Raspberry Pi
- Creo, Inventor, AutoCAD for CAD software

## ***AWARDS AND CERTIFICATES***

**2021**

Team:

- Led 81208X to win Skills Champion at the Maple Leaf tournament, ranked 1<sup>st</sup> place in Canada, 1<sup>st</sup> globally as of Feb. 2021.

## **2020**

### Personal:

- DECA Provincial Champion for Innovation Business Plan, qualified to the 2020 DECA World ICDC Championships (cancelled due to COVID-19)
- Certificate of Distinction for the 2020 CSMC Math Contest
- Global Finalist for the Vex Annotated Programming Skills Video Submission
- SHAD 2020 Alumni

### Team:

- Led 81208X to win the Provincial Create Award at the 2020 Vex Ontario Provincial Championships, qualified to the 2020 VEX World Championships
- Led FIRST Tech Challenge team 16488 from St. Robert CHS to win the Inspire Award at the 2020 FTC Ontario Championships, qualified the team to the 2020 FTC World Championships

## **2019**

### Team:

- Led the Robotics Team from St. Robert CHS representing York Catholic DSB, competed at the Ontario Skills Challenge, ranked 2<sup>nd</sup> programming, 5<sup>th</sup> ranked overall
- Led VRC team 81208X to win the Judges Award at the St. Michaels Regional, qualified to compete at the VEX Ontario Provincial Championships

## **2018**

### Personal:

- Silver Award at the 2018 York Region Science and Technology Fair
- First Place video production in the *Many Face of Markham* Art Contest

### Team:

- Founder and captain of VEX Robotics Competition team 81208X LeRoi Robotics, led team to win the Excellence Award at the Toronto Regional

## ***WORK EXPERIENCE***

### **Developer Assistant, Dr. Robot Inc.**

Apr. 2020 - Present

- Provided suggestions on mechanical improvement
- Enhanced the mechanism's build quality

### **Counsellor, STEAM Program for Youth**

Jul. - Sep. 2020

- Edited the curriculum and hosted demos

- Instructor assistant throughout the lessons and work periods
- Assessed the performance of the students

**Assistant, *STEAM Program for Youth***

Jun - Sep. 2019

- Hosted workshops to teach robotics building and programming skill
- Arranged robotic competitions
- Organized outreach activities and assisted in marketing aspects

**Teaching Assistant, Dr. X Academy**

Jun. - Sep. 2018

- Taught fundamentals of robotics design and building skill
- Created presentation material and managed entire teaching procedure
- Provided mentorship to students who were additionally interested in STEM

***ACTIVITIES & INTERESTS***

- |   |                       |
|---|-----------------------|
| - Varsity Tennis Team of ST. Robert CHS                 | Sep. 2017 - Nov. 2017 |
| - Alpine Skiing/Night Fly Skiing Club of St. Robert CHS | Sep. 2017 - Jun. 2019 |
| - Piano RCM Level 10                                    | Aug. 2019             |
| - Alto Saxophone RCM Level 5                            | Nov. 2019             |